



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/498,703	09/26/2014	Hyung-il Ahn	ARC920140046US1	4726
75739	7590	11/18/2019	EXAMINER	
RYAN, MASON & LEWIS, LLP			ISMAIL, MAHMOUD S	
2425 Post Road			ART UNIT	PAPER NUMBER
Suite 204			3662	
Southport, CT 06890			NOTIFICATION DATE	DELIVERY MODE
			11/18/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

CTOFFICE@RML-LAW.COM
kmm@rml-law.com
mjc@rml-law.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HYUNG-IL AHN, MATTHEW DENESUK,
AXEL HOCHSTEIN, and YING TAT LEUNG

Appeal 2018-001954
Application 14/498,703
Technology Center 3600

Before BIBHU R. MOHANTY, BRUCE T. WIEDER, and
KENNETH G. SCHOPFER, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the
Examiner’s decision to reject claims 1–3, 5–8, 10–13, 15–18, and 20–22.
We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37
C.F.R. § 1.42. Appellant identifies the real party in interest as International
Business Machines Corporation. Br. 1.

BACKGROUND

The Specification discloses that “[e]mbodiments of the invention generally relate to information technology, and, more particularly, to vehicle monitoring and maintenance.” Spec. 1, ll. 5–6.

ILLUSTRATIVE CLAIM

Independent claim 1 is illustrative of the appealed claims and recites:

1. A method comprising the following steps:

[(a)] splitting an input time series pertaining to a vehicular component across a fleet of multiple vehicles into multiple sub-time series, wherein each of the multiple sub-time series comprises multiple data points of the input time series that correspond to one of multiple measurements derived from the vehicular component;

[(b)] determining a weight applied to each of the multiple sub-time series based on a predetermined weight associated with the input time series, wherein said determining comprises associating the pre-determined weight associated with the input time series with each of the multiple sub-time series;

[(c)] applying one of two classification labels to each of the multiple sub-time series based on a relationship of the data points of the given sub-time series and a selected threshold value, wherein the classification labels comprise (i) associated with a failure of the vehicular component and (ii) not associated with a failure of the vehicular component;

[(d)] applying one of the two classification labels to the input time series to correspond to the label applied to a majority of the multiple sub-time series;

[(e)] calculating a performance measure for the input time series based on (i) the weight applied to each of the multiple sub-time series, and (ii) a determination as to whether the correct classification label has been applied to each of the multiple sub-time series;

[(f)] determining an updated weight associated with the input time series based on (i) the predetermined weight

associated with the input time series, (ii) the weight applied to each of the multiple sub-time series, and/or (iii) the performance measure, wherein said determining the updated weight associated with the input time series comprises calculating $w * exp(p)$, if any of the one or more sub - time series is classified incorrectly, and reusing the pre-determined weight otherwise, wherein (w) represents the pre-determined weight and (p) represents the performance measure; and

[(g)] generating an estimate of failure risk for the vehicular component based on (i) the classification label applied to each input time series and (ii) the updated weight associated with the input time series;

wherein at least one of the steps is carried out by a computing device.

Appeal Br. 19–20 (bracketed labels added).

REJECTION

The Examiner rejects claims 1–3, 5–8, 10–13, 15–18, and 20–22 under 35 U.S.C. § 101 as claiming unpatentable subject matter.

DISCUSSION

Standard for Patent Eligibility

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101.

However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g.*, *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (citation omitted).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework,

we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 187; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by

attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (citation omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (alterations in original) (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

The United States Patent and Trademark Office (USPTO) recently published revised guidance on the application of the *Alice* and *Mayo* framework. USPTO’s 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Revised Guidance”). Under that guidance, we first look to whether the claim recites:

- (1) (*see* Revised Guidance Step 2A – Prong One) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and

(2) (*see* Revised Guidance Step 2A – Prong Two) additional elements that integrate the judicial exception into a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h) (9th ed. 2019)).²

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim (*see* Revised Guidance Step 2B):

(3) adds a specific limitation beyond the judicial exception that are not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Revised Guidance.

Analysis

Appellant groups all claims together in arguing against this rejection. *See* Appeal Br. 9–18. We select independent claim 1 as representative. The remaining claims stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Step 2A, Prong One

The Examiner determines that the “[t]he claimed invention is directed to the concept of generating an estimate of a risk failure, which is merely the automation of human activity and an idea of itself, which is merely an abstract idea” that “could be done by a human analog (by hand or merely

² We acknowledge that some of these considerations could instead be evaluated under Step 2 of *Alice* (Step 2B of Office guidance). In the interest of maintaining consistent treatment within the Office, we evaluate them under Step 1 of *Alice* (Step 2A of Office guidance). *See* Revised Guidance.

thinking).” Ans. 3–4 (emphasis omitted). We agree that the claim recites mental processes as steps for ultimately determining an estimate of failure risk of a vehicle component. Each of steps (a)–(g) are limitations that can practically be performed by the human mind. For example, step (c) requires “applying one of two classification labels to each of the multiple sub-time series based on a relationship of the data points of the given sub-time series and a selected threshold value.” Thus, this step merely requires a comparison of data to a threshold value and applying a label reflecting whether the sub-time series is “associated with a failure of the vehicle component” or “not associated with failure of the vehicular component.” Such observation and labelling can be readily performed by the human mind.

We also find that claim 1 recites mathematical concepts at least in step (f). Specifically, step (f) requires “determining an updated weight associated with the input time series” by calculating the result of a specific formula, i.e., “ $w * \exp(p)$, if any of the one or more sub - time series is classified incorrectly.”

Mental processes and mathematical concepts are both categories of abstract ideas, and thus, we determine that claim 1 recites an abstract idea. Revised Guidance at 52.

Step 2A, Prong Two

Having determined that claim 1 recites a judicial exception, we next consider whether there are additional elements in the claim that integrate the judicial exception into a practical application, i.e., that “apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed

to monopolize the judicial exception.” *See* Revised Guidance Step 2A–Prong Two. Here we look to see if, for example, (i) any additional elements of the claims reflects an improvement in the functioning of a computer or to another technological field, (ii) an application of the judicial exception with, or by use of, a particular machine, (iii) a transformation or reduction of a particular article to a different state or thing (iv) or a use of the judicial exception in some other meaningful way beyond generally linking the use of the judicial exception to a particular technological environment. *See* Revised Guidance at 55; *see also* MPEP § 2106.05(a)–(c), (e)–(h).

Here, the Examiner determines that the only additional element in the claim is a computer device, which “is generically recited and can merely be a general purpose computer that performs basic computer functions of determining, applying, and calculating.” Ans. 4. We agree. As noted above, each of steps (a)–(g) are steps of an abstract idea, either a mental process or a mathematical concept. To the extent these elements refer to “vehicular components,” we find this to be merely a generic link between the limitations and a technological environment. Furthermore, to the extent the claim requires that “at least one of the steps is carried out by a computing device,” this is merely an instruction to perform the abstract idea on a computer.

[T]he mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention. Stating an abstract idea “while adding the words ‘apply it’” is not enough for patent eligibility. Nor is limiting the use of an abstract idea “to a particular technological environment.” Stating an abstract idea while adding the words “apply it with a computer” simply combines those two steps, with the same deficient result. Thus, if a patent's recitation of a computer amounts to a mere instruction to “implemen[t]” an abstract idea

“on . . . a computer,” that addition cannot impart patent eligibility. This conclusion accords with the preemption concern that undergirds our § 101 jurisprudence. Given the ubiquity of computers, wholly generic computer implementation is not generally the sort of “additional featur[e]” that provides any “practical assurance that the process is more than a drafting effort designed to monopolize the [abstract idea] itself.”

Alice, 573 U.S. at 223-24 (citations omitted). Thus, we determine that the claims do not include additional elements reflecting an improvement in the functioning of a computer or another technical field; the application of the abstract idea to a particular machine; a transformation or reduction of a particular article; or the use of the abstract idea in any meaningful way beyond merely linking it to a computer and the environment of vehicle components. As such, we determine that the claim does not set forth a practical application of the abstract ideas recited.

Based on the foregoing, we determine that claim 1 is directed to an abstract idea, namely mental processes or mathematical concepts.

We are not persuaded otherwise by Appellant’s argument “that the Examiner has not considered the collection of specific claim limitations as a whole” and that the Examiner’s characterization of the claim “is a clear oversimplification.” Br. 9–10. Apart from merely listing the specific claim requirements, Appellant does not indicate how the Examiner erred. *See id.* at 10–12. Though the Examiner may not have specifically addressed each limitation of the claim, we see no error, as discussed above, in the conclusion that the claim recites an abstract idea. We also see no error in the Examiner’s conclusion that the only remaining element of the claim is a generic “computing device.” Thus, without further explanation, we are not persuaded by this argument.

Appellant next argues that the claims are not directed to an abstract idea because they “achieve a ‘new and useful end’ that includes generating predictors for non-wear related vehicular component failures.” Br. 12 (citing *Rapid Litigation Management v. CellzDirect, Inc.*, 827 F.3d 1042 (Fed. Cir. 2016)). The claims at issue in *Rapid Litigation* related to a “new and useful laboratory technique for preserving hepatocytes” that employed the use of “natural law,” but went beyond the mere recitation of the natural law and instead claimed applications of it. *Id.* at 1048. These applications amounted to a new and useful application stemming from the natural law. In contrast, the only additional element to the recited abstract ideas here is the instruction to apply it to a computing device. Thus, we disagree that the claims represent any new and useful end or means for applying the abstract ideas.

Step 2B

Turning to Step 2B of the Revised Guidance, we must determine whether the additional elements (1) add a specific limitation or combination of limitations that is not well-understood, routine, and conventional activity in the field, which is indicative that an inventive concept may be present or (2) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception, which is indicative that an inventive concept may not be present. *See* Revised Guidance, 84 Fed. Reg. at 56. This step has been described “as a search for an ‘inventive concept’” –*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible

concept] itself.” *Alice*, 573 U.S. at 217–18 (citing *Mayo*, 566 U.S. at 72–73).

Here, the Examiner finds that the recited computer does not perform any functions that are not well-understood, routine, and conventional.

Ans. 4. We agree. In support, we note that the Specification discloses that “an aspect of the present invention can make use of software running on a general purpose computer or workstation.” Spec. 12, ll. 21–22. The Specification further discloses that the processes are implemented using software on a computer readable storage medium, which “can be a tangible device that can retain and store instructions for use by an instruction execution device.” *Id.* at 14, ll. 20–21. Further, the Specification discloses that:

These computer readable program instructions may be provided to a processor of a general purpose computer, special purpose computer, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions/acts specified in the flowchart and/or block diagram block or blocks.

Id. at 16, ll. 16–21.

Thus, the Specification indicates that the additional elements in claim 1, and the processes performed thereby, are well-understood, routine, and conventional. For example, the claim requires that the steps may be provided to a general purpose computer to perform operations such as: splitting a series of data; associating a weight to a data set; applying a label; calculating; determining a weight by calculating; and generating a result. *See In re Katz*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) (“Absent a possible narrower construction of the terms ‘processing,’ ‘receiving,’ and ‘storing,’

. . . those functions can be achieved by any general purpose computer without special programming”); *Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372, 1378 (Fed. Cir. 2017) (holding that considering claims reciting data retrieval, analysis, modification, generation, display, and transmission as an “ordered combination” reveals that they “amount to ‘nothing significantly more’ than an instruction to apply [an] abstract idea” using generic computer technology) (internal citation omitted).

Based on the foregoing, we agree with the Examiner that the additional element claimed, i.e. the computing device, uses only routine, conventional, and well-understood means to carry out the claimed method. Further, taking the claim elements individually or as an ordered combination, we see nothing in the claim that suggests the claim element or combination of elements is “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.” *Alice*, 573 U.S. at 217–18.

Further, as discussed below, we are not persuaded otherwise by Appellant’s arguments.

With respect to this step, Appellant first argues that “the specific limitations of the claims constitute limitations other than what is well-understood, routine and conventional in the field.” Br. 13. Appellant asserts that this is appropriately done by comparing the claim limitations to the relevant prior art. *Id.* at 14. And because the Examiner has deemed the claims to be novel and non-obvious, Appellant assert that it “cannot plausibly” be concluded that they are “well-understood, routine and conventional in the field.” *Id.* at 14–15; *see also id.* at 16–17.

“It has been clear since *Alice* that a claimed invention’s use of the ineligible concept to which it is directed cannot supply the inventive concept that renders the invention ‘significantly more’ than that ineligible concept.” *BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018). Further, with regard to Appellant’s argument that the Examiner has not shown that the combination of features is not novel and nonobvious, “[t]he ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188-89 (1981). Thus, the fact that an abstract idea is novel and non-obvious alone does not make it eligible. *See Mayo*, 566 U.S. at 90 (holding that a novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible).

Appellant also argues that the Examiner improperly addressed this step by only addressing the additional limitation of the use of a computing device and ignoring the method steps as part of the abstract idea. Br. 15–16. We disagree. Rather, the Examiner finds not only that the computing device is the only additional element beyond the abstract idea, but the Examiner specifically finds that the functions performed by a computer in implementing the abstract idea would be well-understood, routine, and conventional. *See* Ans. 4. Specifically, the Examiner finds that the other limitations represent only the “basic computer functions of determining, applying, and calculating, which are well-understood, routine, and conventional.” *Id.* We are not persuaded of error in the Examiner’s analysis and agree that the method steps represent basic computer functions, as noted above.

Finally, we are also unpersuaded by Appellant’s preemption argument. *See* Br. 16–17. Preemption is not a separate test. “Where a patent’s claims are deemed only to disclose patent ineligible subject matter under the Mayo framework, as they are in this case, preemption concerns are fully addressed and made moot.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015). In other words, “preemption may signal patent ineligible subject matter, [but] the absence of complete preemption does not demonstrate patent eligibility.” *Id.*

Determination Regarding Patent Eligibility

Based on the foregoing, we are not persuaded of error in the Examiner’s rejection of claim 1 as claiming ineligible subject matter. Accordingly, we sustain the rejection of claim 1 and claims 2, 3, 5–8, 10–13, 15–18, and 20–22, which fall with claim 1.

CONCLUSION

We AFFIRM the rejection of claims 1–3, 5–8, 10–13, 15–18, and 20–22.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136 (a). *See* 37 C.F.R. § 1.136 (a)(1)(iv).

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5–8, 10–13, 15–18, 20–22	101	Subject matter eligibility	1–3, 5–8, 10–13, 15–18, 20–22	

AFFIRMED